

PROJECT INTEGRATION MANAGEMENT WITH FIDIC CONTRACTS UNDER THE UMBRELLA OF FAC-1

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ABSTRACT

The article examines the implementation of the new trends in the Project Integration Management in construction. The authors demonstrate how the knowledge from the latest editions of the *PMBOK*[®] and its *Construction Extension* may be used to manage complex projects with several related FIDIC contracts for design, construction, supervision, supply chain. The modern multi-party partnering form, called the “*Framework Alliance Contract FAC-1*”, can integrate all related two-party FIDIC contracts between the participants in the investment process. Practical examples demonstrate how several FIDIC contracts can be managed more efficiently under the umbrella of *FAC-1*. *FAC-1* enables collaboration, BIM, lean practices and the transfer of knowledge.

1. INTRODUCTION

Integration throughout the project life cycle is of paramount importance. In the construction industry, not only do the processes interact, but their management is greatly expanded to address multiple performing organizations, operating simultaneously. Effectiveness and efficiency is dependent on integration management. The need for increased communication and transparency, coupled with timely and efficient decision making, makes **collaboration** a critical technique when countering the effect of project complexity. [1]

For construction to be successful, an integrated organization needs to be created, the commercial interests of the parties need to align around the efficiency of the project as a whole, and lean tools and management methods should be deployed using the latest available technologies. [2]

McKinsey’s 2017 Report recommends several areas to be addressed to boost productivity on projects by some 50 to 60 percent. One of the main factors is the procurement process. There is a need to move away from the hostile contracting environment that characterizes many construction projects to a system focused on **collaboration** and problem solving [3].

Collaborative activities require coordination and agreed timelines in order to create mutual confidence among team members that each will create and share the data that they all need to deliver the project. Collaborative contracts provide the machinery for coordination and the mutual commitments to agreed activities and timelines [4].

The international standard for collaboration ISO 44001:2017 recognizes the need to:

- ✓ Establish and agree s formal foundation for joint working, including contractual frameworks or agreements, roles, responsibilities and ethical principles.

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- ✓ Determine clarity of purpose, encourage appropriate behavior and identify the potential impacts on or conflict with the aims of collaborative working [5].

2. FIDIC CONTRACTS AND COLLABORATION

The International Federation of Consulting Engineers FIDIC [6] was founded in 1913 and issued its first conditions of contract in 1957, further developing the most widely used full suite of contracts for design, construction and services. These sample documents are known as the «**International Best Practice Documents**» and are enjoying ever growing popularity. This is mainly thanks to significant international lenders who demand generally accepted and proven «rules of the game» in their construction projects [7].

Collaboration of designers and contractors is provided under the FIDIC Design-Build Yellow Book [8] and the EPC turn-key Silver Book [9]. The FIDIC Gold Book links design, construction and operation [10].

However, in case of buildings, the architects are not happy to be governed by the Contractor. The Contractor is arguably limiting their opportunity to develop the best design, putting them under pressure for a bigger profit and easier construction operations. FIDIC does not present any option for early Contractor's involvement in the contracts with Employer's design (the Red Book [11] and the Pink Book [12]).

According to the Principal Drafter of the 2017 updates Siobhan Fahey, the latest FIDIC 2017 edition develops many of the project management procedures and mechanisms from the 1999 General Conditions of Contract for major works [8], [9], [11], enhancing and clarifying them **to reflect modern international best-practice** [13]. The 2017 edition has improved collaboration as presented on Figure 1:

- ✓ **SC (Sub-Clause) 3.7 [*Agreement or Determination*]** now clearly defines a collaborative problem solving:
 - A 42-day consultation of the Engineer/ Employer's Representative with the Parties to encourage them to reach agreement provides an obligatory first step in solving any issues/ Claims.
 - The Engineer in the Red/ Yellow Books, though paid by the Employer, is required to "*act neutrally between the Parties*" and "*not be deemed to act for the Employer*".
 - The authority of the Engineer cannot be restricted to obtain the Employer's consent when a determination has to be issued under Clause 3.7.
- ✓ **The new SC 3.6 Silver Book / 3.8 Red/ Yellow Books [*Meetings*]** mandates a forum for effective communication:
 - Management meeting may be held to discuss arrangement for future works and/or other matters;
 - The Employer's other Contractors, the public authorities, the utility companies, and/or Subcontractors may be invited by the Parties to attend the meetings.
- ✓ **The new SC 8.4 [*Advance Warning*]** requires each Party to give advance warning to the other Party of any event that may have an adverse effect on the Works, cause delay or increase the Contract Price.
- ✓ **The new SC 21.4 [*Dispute Avoidance*]** promotes the proactive role of the Dispute Board, now called DAAB – Dispute Avoidance/Adjudication Board. The DAAB may assist the Parties to resolve any disagreement during meetings, Site Visits or otherwise, following a joint request by the Parties or inviting them to make such a joint request.

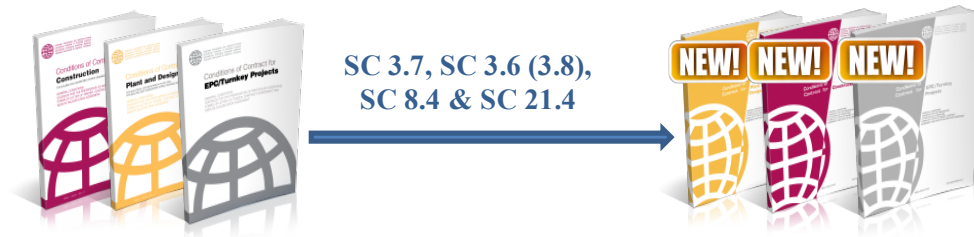


Fig. 1 FIDIC 2017 Edition moves towards collaboration

It would seem that this is an attempt by FIDIC to bring in the concept of ‘partnering’ into the FIDIC contract and to get the parties to co-operate with each other before delay claims start to surface and positions start to become entrenched [14]. But the FIDIC suite has no multi-party partnering form to integrate all project participants: designers, supervisors, contractors, subcontractors. The FIDIC contract mostly underpin the command and control project management style.

3. *FAC-1* AS AN INTEGRATOR

In order to have a **collaborative working environment**, all participants in the construction using FIDIC contracts may sign an **alliance contract**. This will ensure easier project management with tools for:

- Early warning;
- Innovations;
- Time & cost saving;
- BIM support [15];
- Easy transfer of data;
- Know-how transfer.

The 2016 modern multi-party *Framework Alliance Contract FAC-1* is designed for international use to integrate projects under FIDIC and any other project contract forms [16]. The Bulgarian Society of Construction Law (BSCL), full member of the European Society of Construction Law, signed a license agreement with the Association of Consultant Architects (ACA) and the author of *FAC-1* Professor David Mosey for the translation and adaptation of *FAC-1* to comply with the Bulgarian law. The Bulgarian version of *FAC-1* was launched in 2019 [17]. The same was done in Italy and Brazil. The German and Russian editions are under preparation.

An integrated *FAC-1* multi-party *Alliance*, entered into with a group of selected consultants, contractors, suppliers or other providers, enables:

- ✓ Increased transparency, improved efficiency through data shared among *Alliance Members*;
- ✓ Stronger joint commitment to share *Objectives*;
- ✓ Closer working relationships on agreed *Alliance Activities*;
- ✓ Improved joint engagement with the *Supply Chain & Stakeholders*;
- ✓ Collective self-regulation through the *Core Group*;
- ✓ More open measurement against agreed *Targets*;
- ✓ More open motivation to earn agreed *Incentives*.

4. FIDIC CONTRACTS INTEGRATED BY *FAC-1*

A framework alliance may be formed by one or more employers, designers and the selected framework contractors and consultants, led by the Alliance Manager.

Figure 2 presents a practical example for this arrangement for an energy efficiency housing programme. The employers may be several municipalities. The design is prepared by a consultant under a FIDIC White Book Services Agreement [18]. The employers may select jointly several framework contractors, including *FAC-1* in the tender documents as a multi-party integrator. The framework contractors compete with prices for each project (a house or a lot including several houses) and sign Project

Contracts with the FIDIC Green Book Conditions of Contract [19]. The same approach may be followed with the supervisors, who sign *FAC-1* and the FIDIC White Book project agreements.

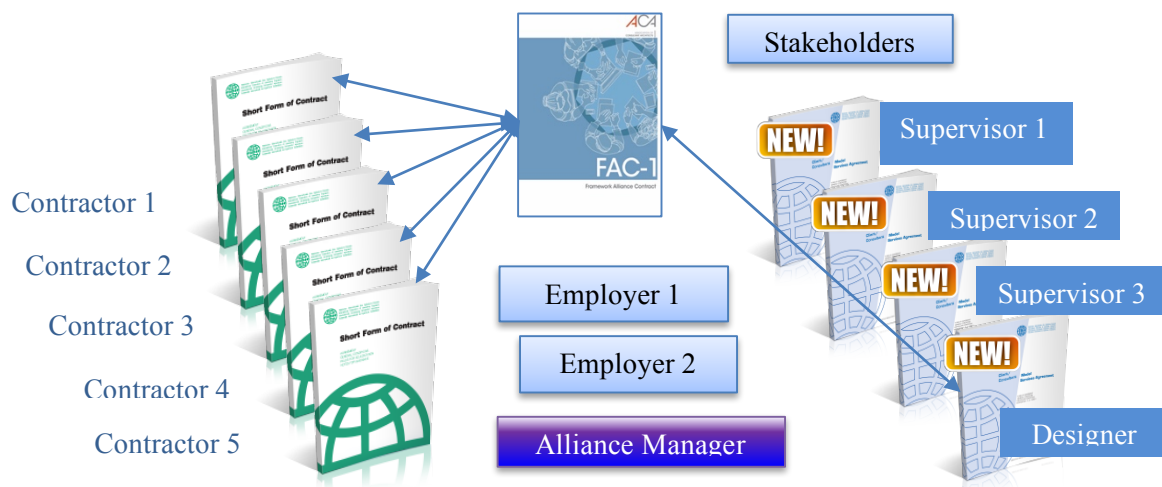


Fig. 2 An energy efficiency housing framework alliance with FIDIC contracts, integrated by *FAC-1*

FAC-1 can successfully integrate the supply chain as well. Figure 3 presents an integrated multi-party framework alliance for school/ sport infrastructure. *FAC-1* led by the Alliance Manager integrates the selected main contractor who signs *FAC-1* and a FIDIC Red Book Contract, the important subcontractors, signing *FAC-1* and the FIDIC Subcontract form [20], the Employer's Designer and Engineer, signing the *FAC-1* and the FIDIC White Book Agreement for Services.



Fig. 3 An integrated alliance for school/ sport infrastructure with FIDIC contracts, united by *FAC-1*

FAC-1 may be used to integrate the parties involved in complex single projects as well.

The German Federal Construction Agency approved the use of FAC-1 as an improved value tool, integrating the supply chain, and as a BIM enabler, within the EPC FIDIC 1999 Silver Book Contract for the New Chancery and Guardhouse of the German Embassy in Sofia. The EPC Contractor GBS will lead the alliance formed with the subcontractors, able to create improved value and/or give timely inputs to BIM. Figure 4 presents a similar example, considered by the Russian FIDIC Member Association for implementation in nuclear projects. The EPC Contractor signs a FIDIC Silver Book contract. The Employer signs a FIDIC White Book Agreement with the Employer's Representative. The EPC Contractor forms an alliance with his designer, subcontractors and suppliers. The designer signs *FAC-1* and a FIDIC White Book Agreement with the EPC Contractor. The Subcontractors may sign the FIDIC Subcontract, or Yellow/ Silver Book contracts. Subcontractors and suppliers may compete within the alliance for additional work packages, thus striving for improved value and innovations.

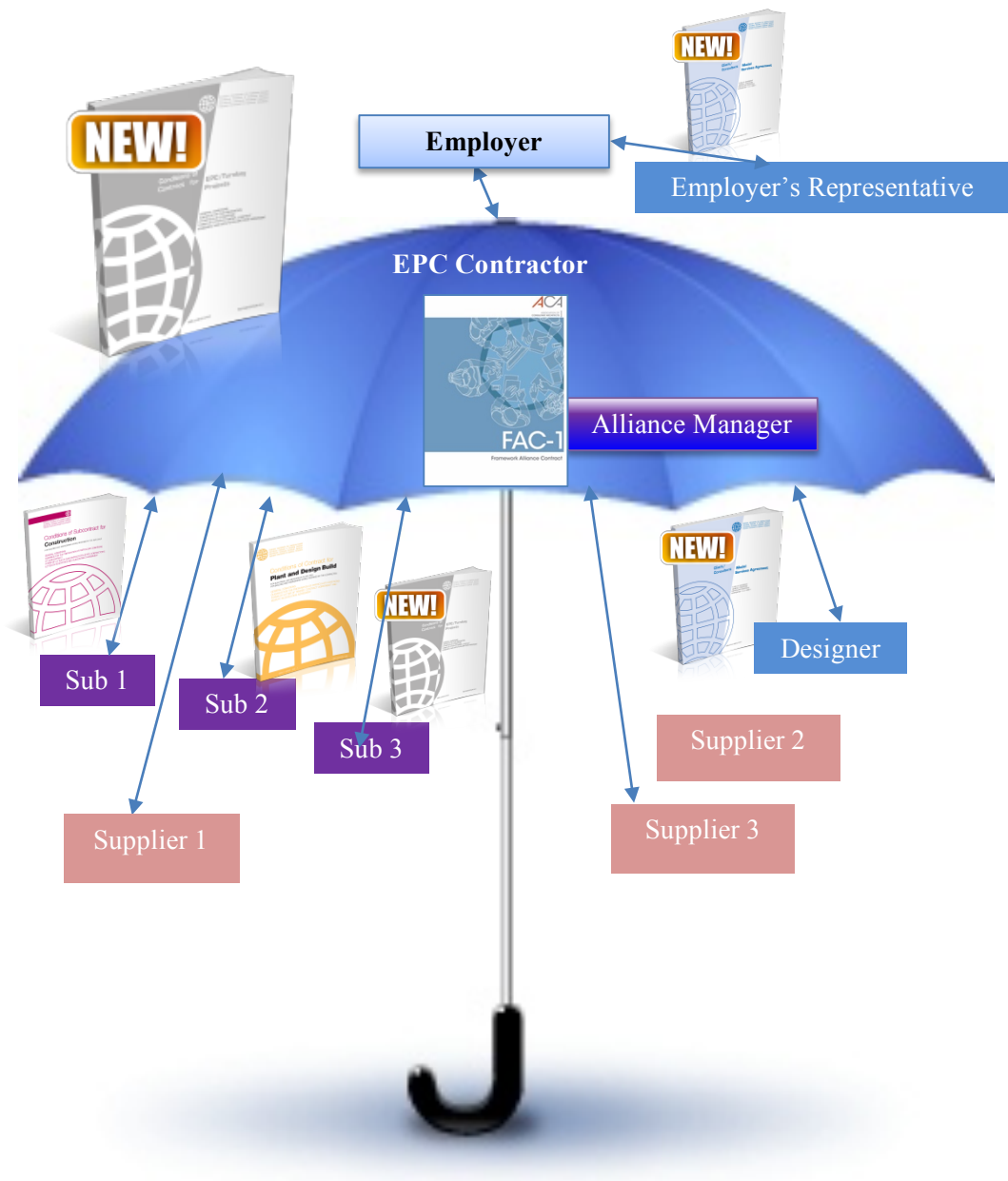


Fig. 4 An EPC Contractor-led alliance for NPP/ TPP with FIDIC contracts, integrated by *FAC-1*

An integrated alliance may be formed under the umbrella of *FAC-1* for complex infrastructure projects, where connected sections and related facilities are executed by different contractors, sometimes with

different funds. Figure 5 demonstrates an example for high speed railway or water / sewage projects. The contractors for different work packages sign different FIDIC contracts (Red or Yellow Book, depending on the design responsibility), integrated by *FAC-1*. The FIDIC Engineers and Employer's Designers sign the FIDIC White Book Agreement and *FAC-1*. The Alliance Manager is facilitating the integration management. The consistent *FAC-1* documents establish shared *Objectives* and encourage a collaborative approach to agreed *Alliance Activities* [21].

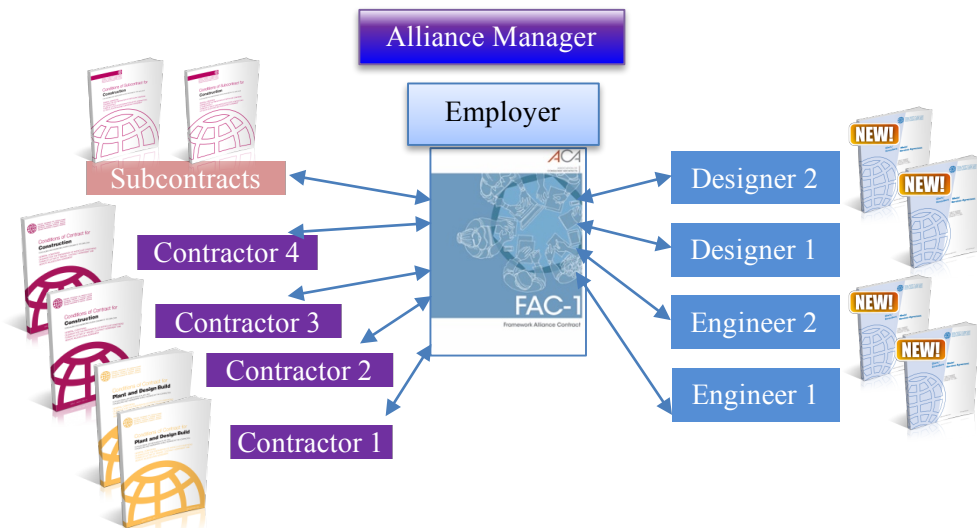


Fig. 5 An integrated alliance for infrastructure with FIDIC contracts, united by *FAC-1*

Employers who are not ready to form a multi-party alliance, can enter into separate *FAC-1* contracts, forming linked alliances with the contractors, designers, consultants, integrating the related projects with the support of the Alliance Manager. Figure 6 shows an example for a high speed railway project, where the Employer, the Alliance Manager and the FIDIC Engineer sign 3 similar *FAC-1* contracts for the two related sections (Red Book FIDIC contract for the construction, White Book FIDIC agreements for the design) and the signaling (design-build FIDIC Yellow Book contract).

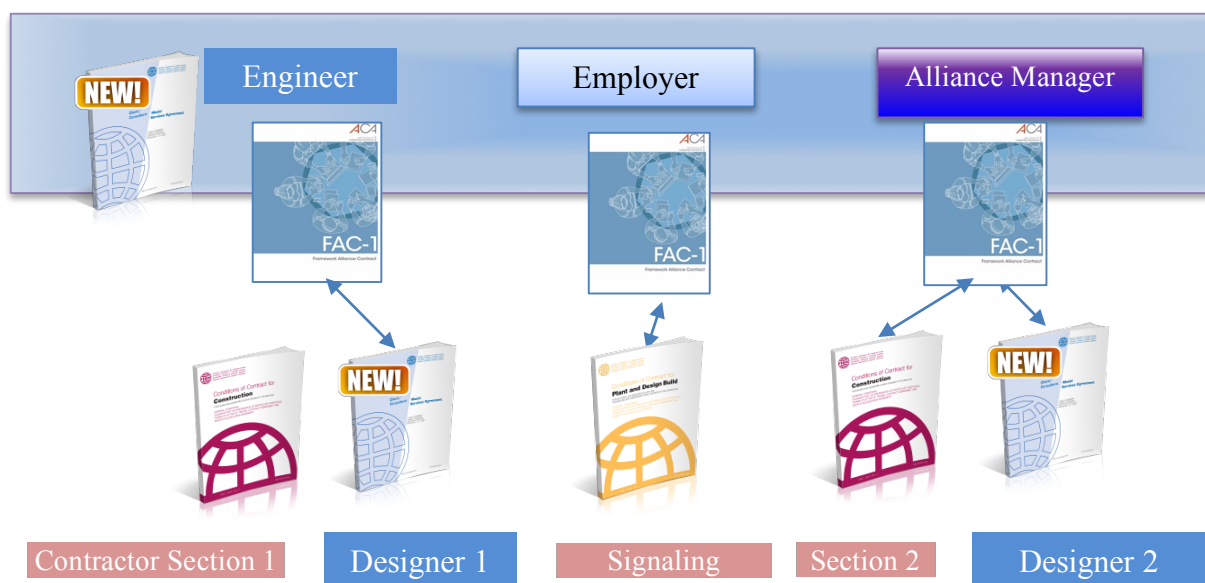


Fig. 6 Linked alliances with *FAC-1* for related railway sections & facilities, integrating FIDIC contracts

5. CONCLUSION

The collaborative contracts are an important tool for the project integration management. The international multi-party standard form *FAC-I* can be used to integrate two-party FIDIC contracts for frameworks or single complex projects.

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